Shropshire Community Health NHS
NHS Trust

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2	March 2019	Minor revision following publication of SIGN guideline Jan 2019
3	December 2021	Minor revision following publication Fetal alcohol spectrum disorder: health needs assessment Department of Health and Social Care September 21
4	January 2023	Revision following publication NICE Quality Standards Fetal Alcohol Spectrum Disorder March 2022

Contents

1 Introduction

1.1 Background

Fetal Alcohol Spectrum Disorders (FASD) represent a range of conditions caused by exposure of a developing foetus to alcohol. An affected foetus may develop both physical, neurodevelopmental and cognitive defects and it can cause significant functional impairments. Maternal alcohol use during pregnancy is now recognised as the leading non-genetic cause of intellectual disability and a population based study concluded that prevention of maternal alcohol use disorder in pregnancy could avoid 3.5% of all cases of intellectual disability[1].

The amount of alcohol consumption required to have a detrimental effect is controversial and has not been established and hence the current guidance for pregnant women is to avoid alcohol altogether. The UK Chief Medical Officers' advice to women is:

'Women who are pregnant or trying to conceive should avoid alcohol altogether".

The Department of Health and Social care for England published a paper in September 2021 reviewing the issue, highlighting the need for greater awareness and support for affected families [2].

In March 2022 NICE published quality standards covering the assessment and diagnosis of Fetal Alcohol Spectrum Disorder[3]. This quality standard adopted the SIGN guideline 156 Children and Young People exposed prenatally to alcohol published in January 2019[4] as the UK wide guideline for this issue.

1.2 Prevalence

There is no good data for the prevalence of FASD in the UK. A case finding study in Manchester suggested a prevalence of 3% of children in the UK for FASD[5]. This equates to approximately 1 in 30 children i.e. on average one child in every primary school class. However, at present the condition is greatly under recognised, often because of lack of antenatal history of alcohol exposure, failure to consider the diagnosis as a possibility and because of cross over with other conditions and social factors. Difficulties obtaining assessments for all neurodevelopmental domains can also make a diagnosis difficult to confirm even if it is suspected.

1.2.1 Prevalence in children in the care system

Children who are taken into care are suspected to have a high prevalence of FASD: an audit in Peterborough found that 34% of looked after children had been exposed to alcohol and in children placed for adoption that figure was 75% of children[6].The possibility of this diagnosis should always be considered as part of the medical assessment of children in this situation

2 Purpose

This guideline is intended to raise awareness of FASD amongst professionals and to outline our local approach to diagnosis and management in line with NICE quality statements three, four and five in the FASD Quality standard (QS204). The first two quality standards in QS 204 relate to advice and support given to pregnant women and do not fall fully within the scope of this guideline. However, in any contact with a pregnant woman including the mandated 28 week public health nursing visit NICE quality standards one and two are relevant. The approach to assessment, diagnosis and management follows the 2019 SIGN guideline.

3 Definitions/Abbreviations

3.1 Fetal Alcohol Spectrum Disorder (FASD)

This is an umbrella term describing the broad range of effects that can occur in an individual whose mother drank alcohol during pregnancy and was not originally used as a clinical diagnosis.

There are a number of different diagnostic guidelines that have been developed over time which use different terms for conditions within the umbrella of FASD. Most diagnostic guidelines previously described Fetal Alcohol Syndrome as occurring in individuals with characteristic (sentinel) facial features, neurocognitive defects and confirmed antenatal alcohol exposure

The face forms in the first trimester approximately between week five to seven of Fetal life (weeks seven to nine of pregnancy) and hence it is only drinking in that period which results in characteristic (sentinel) facial features. Exposure from week nine onwards may be the most significant in terms of brain function and alcohol exposure during the last third of pregnancy may continue to impact on future cognitive function. Hence the level of difficulties is not dependent on the presence of facial features. However, the presence of facial features is characteristic of prenatal alcohol exposure.

FASD with sentinel facial features (diagnostic term)

1) Triad of facial features (short palpebral fissures, elongated and flattened philtrum and a thin upper lip vermillion)
2) Neurocognitive defects structural brain abnormalities (at least 3 domains affected) including microcephaly, structural brain abnormalities, motor co-ordination problems, poor attention and concentration, difficulties with; social communication, memory, executive functions, language and cognition
3) Confirmed history of antenatal alcohol exposure or unknown antenatal alcohol exposure if other causes ruled out.

FASD without sentinel facial features (descriptive term)

1) Neurocognitive defects structural brain abnormalities (at least 3 domains affected) including microcephaly, structural brain abnormalities, motor co-ordination problems, poor attention and concentration, difficulties with; social communication, memory, executive functions, language and cognition
2) Confirmed antenatal alcohol exposure with the estimated dose at a level known to be associated with neurodevelopmental effects.

3.2 Significant antenatal alcohol exposure

Alcohol is a known teratogen (i.e. a compound that causes damage to the developing embryo or foetus) but the impact on an individual foetus can vary. The timing and dose of alcohol exposure, but also maternal health, maternal age and use of other drugs can all influence the impact on the foetus. There is clear evidence that heavy drinking during pregnancy (above normal recommended daily limits for non-pregnant women) is associated with miscarriage, stillbirth, preterm birth, infants who are small for gestational age and birth defects including Fetal Alcohol Syndrome. However not all such exposed foetuses appear affected and for more moderate drinking the evidence is less clear cut[8].

Data from a UK based population study (Millennium Cohort Study) suggests that drinking no more than one or two units of alcohol per week during pregnancy is not linked to developmental problems in early to mid-childhood[9]. However, this may partly reflect other confounding factors such as level of education and affluence and does not necessarily mean that there is no impact from drinking at this level.

There is widespread confusion as to what a unit of alcohol actually is which may lead to women underestimating their alcohol consumption.

Alcohol intake which was sufficient to cause social impairment e.g. frequent episodes of intoxication, development of tolerance or withdrawal, social or legal problems relating to drinking or alcohol related medical problems e.g. hepatic disease would all clearly indicate significant antenatal alcohol exposure.

The Canadian Guidelines 2016 suggested that drinking 4 or more drinks per occasion on 2 or more occasions or 7 or more standard drinks per week during pregnancy is sufficient to cause neurodevelopmental impairment.

The SIGN guideline has not set any level for significant alcohol exposure and any exposure to alcohol during pregnancy is considered sufficient to consider the diagnosis.

4 Duties

4.1 Chief Executive

The Chief Executive has ultimate accountability for the strategic and operational management of the Trust, including ensuring there are effective and appropriate processes in place for the identification and medical management of children with FASD

4.2 Director of Nursing and Medical Director

The Director of Nursing and Medical Director have the responsibility of ensuring that children with FASD are offered appropriate medical management and support patient safety at all times.

4.3 Service Managers

Paediatric Service Managers are responsible for the day to day operational management and co-ordination of the identification and medical management of children with FASD in line with the clinical guideline.

4.4 All Clinical Staff

Paediatric clinical staff are key members of the Multi-disciplinary team in ensuring that children with FASD are identified and managed appropriately as per the guideline. Clinical staff are required to comply with this guideline and to report any adverse care related issues to their line manager and to complete a Datix incident report in line with the Trust's Incident reporting policy.

5 Clinical aspects of FASD

5.1 Physical features associated with FASD

The following are known associations with antenatal alcohol exposure but are not diagnostic (with the exception of the triad of facial features)

<u>Skeletal</u>

Under developed nails

Shortened 5th digit

Fused bone in forearm, fingers, toes, hands

Clinodactyly

Camptodactyly

Chest deformity

Fusion of any 2 neck vertebrae, Failure of one side of vertebrae to form

Scoliosis

Cardiac

Atrial Septal Defect, Ventricular Septal Defect, Tetralogy of Fallot (complex congenital heart defect consisting of; ventricular septal defect, pulmonary stenosis, overriding aorta and right ventricular hypertrophy)

Abnormal great vessels

Craniofacial

Cleft palate

Flat midface

Pointed chin, small jaw, low set pointed ears, epicanthic folds (skin folds inner eye), ptosis, appearance of long philtrum

Classic FAS triad – small palpebral fissures/ thin upper lip/ smooth philtrum (the sentinel facial features)

Kidney

Abnormal growth or underdeveloped kidney

Horseshoe kidneys (Renal Fusion)

Ureteral duplications

Cysts caused by obstructed urine flow

Respiratory

Underdeveloped lungs

Frequent and severe lower respiratory tract infections

Vision

Retinal vessel anomalies

Optic nerve anomalies including hypoplasia

Anterior chamber anomalies/ lens and corneal anomalies

Strabismus

Significant refractive errors

Hearing

Auditory processing problems

Hearing loss

Neurological

Microcephaly

Thinning/absence corpus callosum

Abnormal cysts or cavities in the brain

Seizures, tremors and poor fine motor skills

Other

Railroad track ears
Hockey stick palmar crease

5.2 Neurocognitive effects – patterns of dysfunction on psychometric tests in individuals affected by antenatal alcohol exposure

Learning disabilities
Attention deficits
Hyperactivity
Poor impulse control
Problems in social perception and social communication
Speech and language impairment especially receptive (understanding of language)
Poor capacity for abstract thinking
Specific deficits in maths skills
Memory problems
Problems with cause and effect
Problems anticipating consequences
Problems changing behaviour or adapting to a situation
Affect regulation
Motor deficits including co-ordination

5.3 Presentation of FASD by age[10];

5.3.1 Newborn and infancy

Intra-uterine growth restriction
Feeding difficulties, faltering growth
Sentinel facial features or other physical effects e.g. microcephaly, strabismus, cardiac deficit
Delayed motor development, Hypertonia or hypotonia, poor co-ordination
High pitched vocalisations
Difficulties with autonomic regulation e.g. temperature control
Short attention span, Hyperactivity, Disinhibition
Sleep problems, irritability, demanding,
Delayed speech

5.3.2 Pre-school age

Feeding difficulties, faltering growth
Sentinel facial features or other physical effects e.g. strabismus, cardiac deficit
Delayed motor development, Hypertonia or hypotonia, poor co-ordination
Short attention span, Hyperactivity, Disinhibition
Sleep problems, irritability, demanding,
Cognitive difficulties
Delayed speech and language development
Delayed play and social skills
Sensory Integration difficulties

5.3.3 Primary school age

Short stature, facial features, other physical problems e.g. eye or heart
Social communication disorder, attachment difficulties
Hyperactivity, inattention, sleep difficulties
Language processing difficulties
Learning and academic difficulties
Memory difficulties
Poor self esteem
Co-ordination difficulties
Sensory processing difficulties

5.3.4 Secondary school age

Facial features may be less obvious with age, short stature may be less marked
Hyperactivity, impulsivity, inattention and risk taking
Social interaction difficulties
Anxiety, depression, Self harm, sleep problems
Conduct disorder, may be criminal activity and involvement with justice system
Vulnerable to alcohol and drug use
Poor achievement at school especially maths
Memory difficulties, fine motor difficulties
Poor adaptive functioning

5.4 The benefits of identifying that an individual is affected by FASD

Identifying that an individual is affected by FASD has implications for the individual, their birth mother, their family and the wider community. As the diagnosis is potentially stigmatising, particularly for the birth mother, there can be reluctance on the part of professionals to tackle this issue. The consequences of an incorrect diagnosis for both mother and child should be considered carefully. However, there is evidence that early diagnosis may prevent the development of secondary disabilities in the individual affected (e.g. Mental health issues, disrupted schooling and later trouble with the law and unemployment)[11]. There is also some evidence that a diagnosis, which is coupled with appropriate counselling and treatment for the biological mother, can prevent subsequent affected siblings being born. Prevention of future affected siblings is particularly important as the severity tends to increase with increasing birth order. There is also the wider concern that if the condition is under recognised the true impact of alcohol in pregnancy is not recognised which has implications for society as a whole.

5.5 Referral for consideration of a diagnostic assessment for FASD

1) If there was **known** antenatal alcohol exposure **and** there are concerns about the child's development and/ or facial features refer to Community Paediatricians.

   If it is known that there was antenatal alcohol exposure but there are **no** current developmental concerns the primary healthcare provider should document the antenatal alcohol exposure so that this information is available if concerns arise subsequently. It is of particular importance that a child in this situation has their formal developmental

review by their Health Visitor at 9-12 months and 2- 2.5 years (e.g. Ages and Stages questionnaire).

If developmental concerns arise at any point referral should be made to Community Paediatricians and the history of antenatal alcohol exposure documented in the referral.

2) If alcohol intake antenatally is **unknown** consider referral when;

- there is concern raised by parent or caregiver that their child might possibly have FASD

Otherwise;

Concerns about facial features and development or developmental concerns alone should in any event be referred to Community Paediatricians. Community Paediatricians would consider whether facial features were in themselves indicative of antenatal alcohol exposure.

5.6 Assessment

A Community Paediatrician will take the lead role and will follow the SIGN 2019 guidelines (see link in Appendix 1) in order to come to a conclusion as to whether diagnostic criteria are met. A full neurodevelopmental history and examination will be carried out with particular attention to the following;

History of Alcohol Exposure

Is there evidence of alcohol consumption in pregnancy? This history may be difficult to obtain as women may be reluctant to admit to drinking in pregnancy and this needs to be asked about in a sensitive manner. In the case of a child in care it may not be possible to speak to the biological mother directly and the clinician will need to liaise with the child's social worker.

If there is no evidence or insufficient evidence of prenatal alcohol exposure it may not be possible to confirm the diagnosis. The presenting symptoms should then be managed by appropriate teams. However, the sentinel facial features are so strongly related to alcohol exposure, that where these are present if no other cause is found for the facial features and developmental difficulties the diagnosis can still be given. Genetics referral should be considered particularly if there are other dysmorphic features not typically related to antenatal alcohol exposure.

History of other relevant factors predisposing to neurodevelopmental difficulties

This would include hereditary, prenatal and postnatal factors that could influence development e.g. family history of neurodevelopmental disorder, prematurity, antenatal bleeding, postnatal brain injury or infection, exposure to other drugs (prescription and recreational), domestic violence, neglect and other psychological trauma.

Examination

Facial features should be analysed using University of Washington Lip-Philtrum guides and Palpebral fissure length chart (see Canadian guidelines – link in Appendix 1). (NB separate guides for different races) and child should not smile as this artificially thins upper lip

Head circumference should be plotted against norm for age and sex (past and present). Microcephaly defined as <2SD below the mean and this at any age is considered significant.

Neurological examination

General physical examination

School report- what help and 'scaffolding' (support by an adult to achieve a task) are they requiring

The diagnosis/descriptor of FASD is made only when there is evidence of pervasive and long-standing brain dysfunction, which is defined by severe impairment (a global score or a major subdomain score on a standardised neurodevelopmental measure that is ≥2 SDs below the mean, with appropriate allowance for test error) in three of more of the following neurodevelopmental areas of assessment:

- motor skills
- neuroanatomy/neurophysiology
- cognition
- language
- academic achievement
- memory
- attention
- executive function, including impulse control and hyperactivity
- affect regulation,
- adaptive behaviour, social skills or social communication.

Further assessments would need to be individualised depending on areas of concern e.g:

- Would need Speech and Language therapy assessment for language deficits
- May need Occupational Therapy assessment with Movement ABC for motor issues
- CONNORS questionnaire for attention
- Autism specific history and ASD screening questionnaire (AQ)
- Standardised Cognitive assessment which will require Educational Psychology assessment if school age
- Other more specialised questionnaires/assessments might need to be sourced

<u>Differential Diagnosis</u>

FASD with sentinel facial features is a diagnosis of exclusion.

In particular it may be confused with;

Other genetic conditions e.g Williams syndrome, Cornelia de Lange syndrome

Some anti-epileptic drugs can also produce a long philtrum and thin upper lip in an exposed foetus.

Infants and young children under the age of 6 years with all 3 sentinel facial features and microcephaly are at high risk of neurodevelopmental disorder and can be given the diagnosis of FASD with sentinel facial features.

Infants and young children with all 3 sentinel facial features but no microcephaly should be referred to genetics. If no alternative cause is found and they do not yet have evidence of neurodevelopmental disorder they can be designated as *At risk for neurodevelopmental disorder and FASD*

When a diagnosis of FASD is made any associated growth or physical health problems should be recorded along with any other factors that may be relevant to future developmental progress e.g exposure to trauma, other potential hereditary factors and comorbid conditions.

<u>Investigations</u>

As part of diagnostic work up:

Chromosomal analysis - microarray

Genetics opinion to be considered particularly where other dysmorphic features or anomalies present

Brain imaging via MRI scan to be considered where clinically indicated (e.g. microcephaly or neurological signs)

To exclude associated abnormalities once Fetal Alcohol Syndrome Disorder strongly suspected or confirmed:

Ophthalmological evaluation

Hearing assessment

ECHO (if clinical examination raises concern re cardiac abnormalities)

5.7 Post-diagnostic support and management

A diagnosis should provide a blueprint for early intervention based upon the unique needs of the child and their family

Any associated physical problems should be managed as appropriate by the relevant clinical teams e.g. ophthalmology

Clinicians should be aware of the high association between FASAD and Attention Deficit Hyperactivity Disorder (ADHD) and to a lesser extent Autistic Spectrum Disorders. There is also a risk of secondary mental health issues. CAMHS involvement should be requested where indicated.

Input from therapy services e.g. Speech and Language Therapy, Occupational Therapy and Physiotherapy should be requested where appropriate.

Resources are available for Educational settings detailing the needs of children with FASD and approaches to helping them in the Educational setting through organisations such as the National organisation for FASD https://nationalfasd.org.uk

5.7.1 Pre and Post diagnostic support for families

Information and support for families is also available through voluntary organisations e.g.

FASD awareness https://www.fasdawareness.org.uk

National organisation for FASD https://nationalfasd.org.uk

FASD UK facebook group

Interactive resource for children to learn about FASD – Learn about FASD- me and my FASD https://fasd.me

6 Consultation

The guideline has been checked against the SIGN guideline published in January 2019 Department for Health and Social Care published a paper in September 2021 and the NICE Quality Standards published in March 2022. It has been distributed for comment to the community paediatric team at Shropshire Community Health NHS Trust.

7 Dissemination and Implementation

The guideline will be disseminated by the following methods:

1) Managers informed via DATIX system who then confirm they have disseminated to staff as appropriate
2) Staff via Team Brief
3) Published to the staff zone of the trust website

8 Monitoring Compliance

As there would be difficulties in identifying all individuals who have a significant antenatal alcohol exposure history a targeted audit concentrating on high-risk groups e.g. children attending for looked after children's medicals will be the most practical approach and this will be within 12 months.

9 References

1. O'Leary et al. Intellectual disability: population-based estimates of the proportion attributable to maternal alcohol use disorder during pregnancy*. Developmental Medicine and Child Neurology* 2013;55: 271 -277.
2. Fetal-alcohol-spectrum-disorder-health-needs-assessment Department of Health and Social Care September 2021
3. NICE Quality Standard QS 204 Fetal Alcohol Spectrum Disorder
4. SIGN guideline 156 Children and Young People exposed prenatally to alcohol January 2019
5. McCarthy, R., Mukherjee, R. A., Fleming, K. M., Green, J., Clayton-Smith, J., Price, A. D., … & Cook, P. A. (2021). Prevalence of fetal alcohol spectrum disorder in greater Manchester, UK: An active case ascertainment study. *Alcoholism: Clinical and Experimental Research*, *45*(11), 2271-2281.
6. Gregory et al: Identifying children who are at risk of FASD in Peterborough: working in a community clinic without access to gold standard diagnosis. *Adopt Foster 2015;39(3):225-34.*
7. Cook et al:Fetal alcohol spectrum disorder: a guideline for diagnosis across the lifespan. *CMAJ*, February 16, 2016, 188(3). (Canadian 2016 guideline).
8. Gray R. Epidemiology of drug and alcohol use during pregnancy. 2011. *Mac Keith Press; Alcohol, drugs and Medication in Pregnancy*
9. Kelly et al. Light drinking versus abstinence in pregnancy – behavioural and cognitive outcomes in 7-year-old children: a longitudinal cohort study. *BJOG* 2013; 120:11:1340-1347
10. Hanlon-Dearman AC: How FASD presents across the lifespan. Prevention, Recognition and Management of Fetal Alcohol Spectrum Disorders 2021. pp 85-97
11. Streissguth et al: The challenge of fetal alcohol syndrome:overcoming secondary disabilities. *Seattle:University of Washington Press*; 1997.pp 25-39.

10 Appendix 1

Canadian Guidelines Cook et al 2016 link is below;

http://www.cmaj.ca/content/cmaj/188/3/191.full.pdf

Please see below for summary and checklists for each category, based on Canadian Guidelines Cook et al 2016.

FETAL ALCOHOL SYNDROME WITH SENTINEL FEATURES CHECKLIST: Based on Canadian Guidelines Cook et al 2016

After all other diagnosis excluded.

Physical (all 3) at any age (Please refer to picture guides Appendix 2)	
Short palpebral fissure < 3rd centile	
Smooth/flat philtrum – 4 or 5 on University of Washington Lip-philtrum guide	
Thin upper lip- 4 or 5 on University of Washington Lip-philtrum guide	
Impairment of 3 or more (> 2SD below the mean i.e. < 3rd centile)	
Neuroanatomy/neurophysiology *	
Motor skills	
Cognition IQ	
Language	
Academic achievement	
Memory	
Executive functioning + abstract reasoning + hyperactivity	
Attention control	
Adaptive behaviour/social skills + social communication	
Affect regulation e.g diagnosable disorder of mood	
Confirmed Maternal alcohol Exposure	
Unconfirmed Maternal alcohol Exposure	
Microarray and Genetics referral excludes alternative cause	

*Structural brain abnormalities (e.g., microcephaly, partial or complete agenesis of the corpus callosum, cerebellar hypoplasia)

Documented measurements of the head circumference (occipitofrontal circumference below the 3rd percentile) adjusted for age and gender (during the physical examination at any age except at birth when moulding may have made artificially low) and other evidence of functional or structural CNS dysfunction based on a neurologic examination or findings on imaging techniques (computed tomography scan, magnetic resonance imaging,

electroencephalogram). Neurologic problems may include seizures not due to a postnatal insult

FASD WITHOUT SENTINEL FACIAL FEATURES CHECKLIST: Based on Canadian Guidelines Cook et al 2016

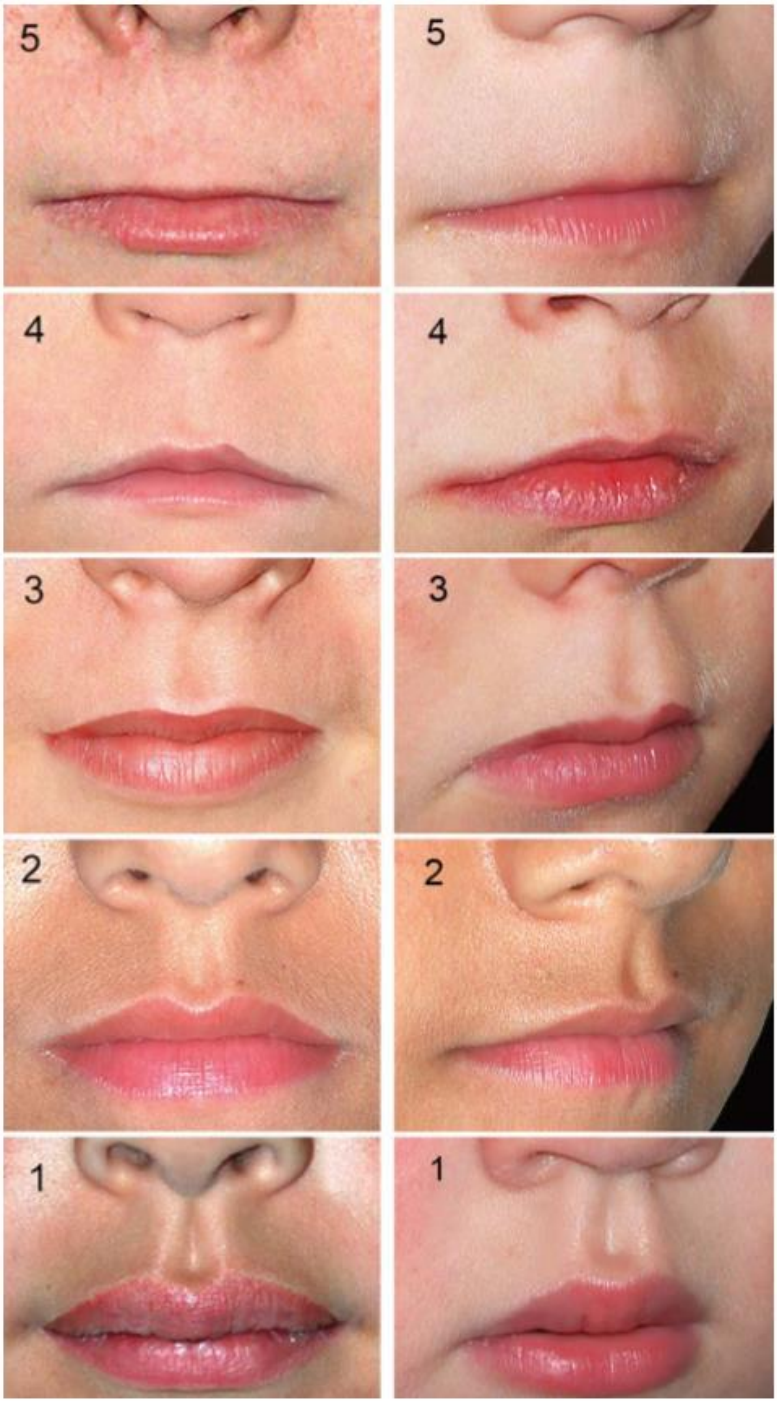
Physical (2 out of 3) at any age (Please refer to picture guides Appendix 2)	
Short palpebral fissure < 3rd centile	
Smooth/flat philtrum- 4 or 5 on University of Washington Lip-philtrum guide	
Thin upper lip-4 or 5 on University of Washington Lip-philtrum guide	
Impairment of 3 or more	
Neuroanatomy/neurophysiology *	
Motor skills	
Cognition IQ	
Language	
Academic achievement	
Memory	
Executive functioning + abstract reasoning+ hyperactivity	
Attention control	
Adaptive behaviour/social skills + social communication	
Affect regulation e.g diagnosable disorder of mood	
Confirmed Maternal Alcohol Exposure	
Microarray and Genetics referral excludes alternative cause	

*Structural brain abnormalities (e.g., microcephaly, partial or complete agenesis of the corpus callosum, cerebellar hypoplasia)

Documented measurements of the head circumference (occipitofrontal circumference below the 3rd percentile) adjusted for age and gender (during the physical examination at any age except at birth when moulding may have made it artificially low) and other evidence of functional or structural CNS dysfunction based on a neurologic examination or findings on imaging techniques (computed tomography scan, magnetic resonance imaging, electroencephalogram). Neurologic problems may include seizures not due to a postnatal insult

Appendix 2

Lip-Philtrum guide taken from BMA report Feb 2016

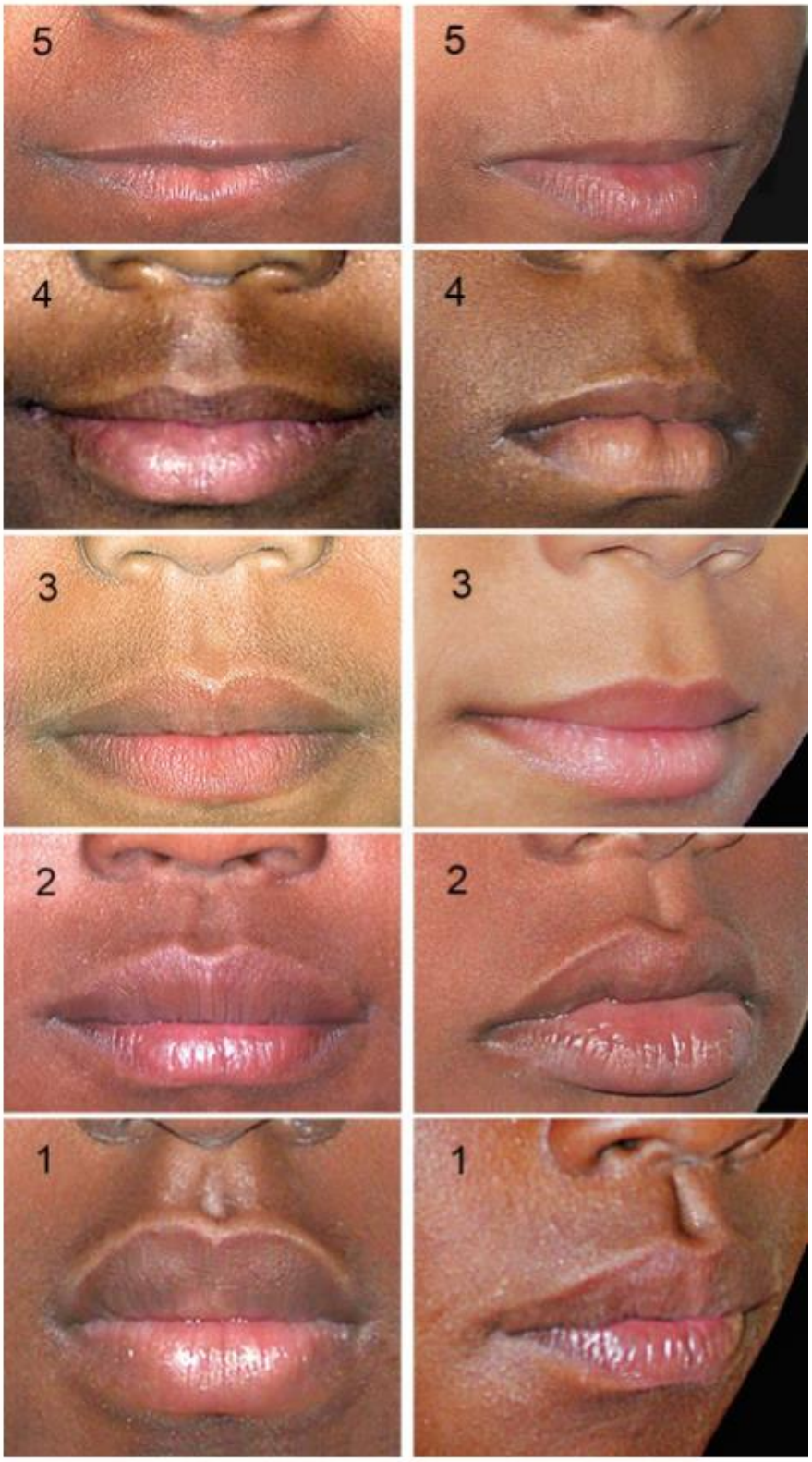


Lip-Philtrum Guide 1 **Philtrum Guide**

For use as a digital image on a smartphone or tablet. Printing invalidates Guide.

Squares ensures length by width ratio of image is correct.

The smoothness of the philtrum and the thinness of the upper lip are assessed individually on a scale of 1 to 5 (1= unaffected, 5 = most severe). The patient must have a relaxed expression, because a smile can alter the features. Lip and philtrum are scored separately. Scores of 4 and 5, in addition to short palpebral fissures, correspond to Fetal alcohol syndrome



Lip-Philtrum Guide 2 **Philtrum Guide**

For use as a digital image on a smartphone or tablet. Printing invalidates Guide.

Squares ensures length by width ratio of image is correct.

Palpebral Fissure Length: Chudley et al 2005

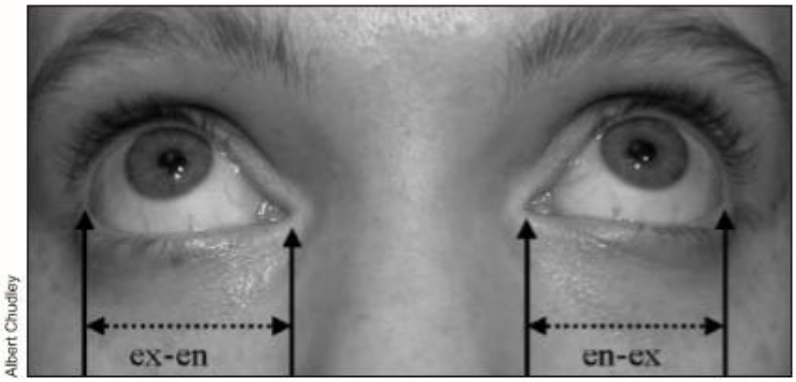
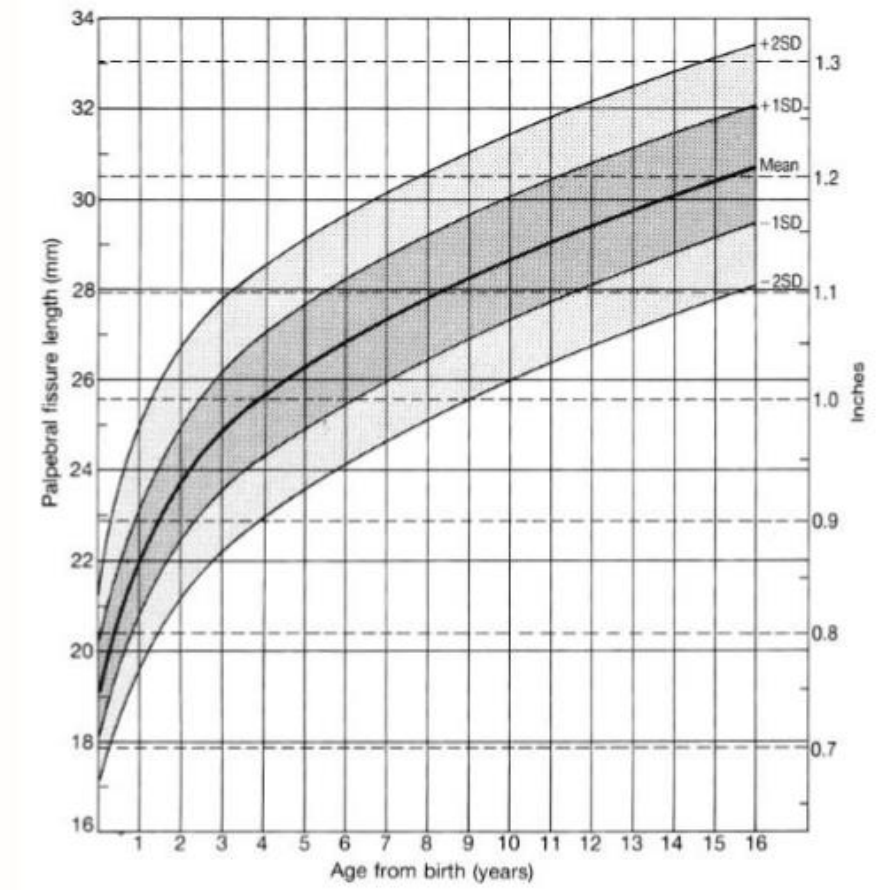


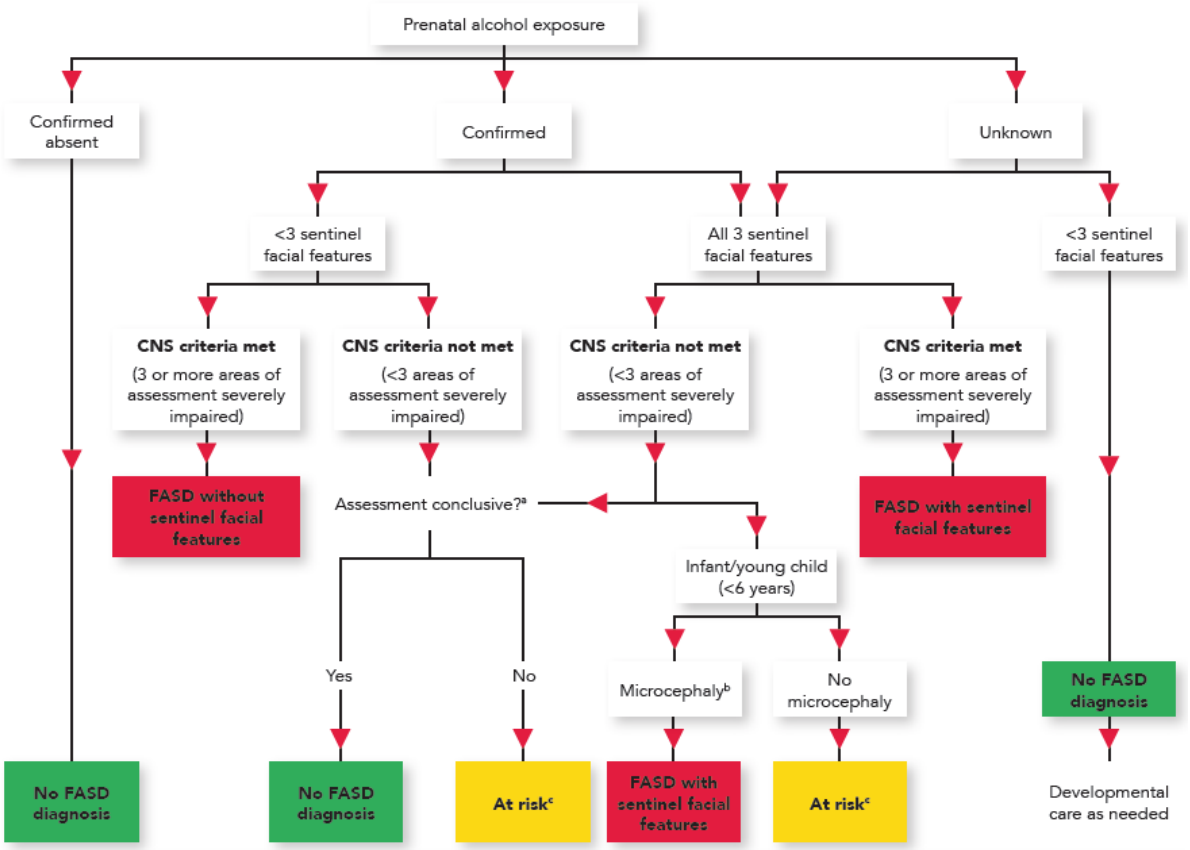
Fig. 2: Palpebral fissure length. To measure palpebral fissure length, identify the inner corner or encanthion (en) and outer corner or excanthion (ex) for each eye. Have the patient look up so that ex can be seen clearly. With a clear flexible ruler held in the horizontal plane, measure the length of each ex-en interval immediately below the eye, being careful not to touch the eye or eyelashes. Plot the result on an appropriate nomogram chart to determine the percentile or standard deviation for each eye.

CMAJ • MAR. 1, 2005; 172 (5 suppl) S9



Appendix 2-2: Palpebral fissure length for both sexes, birth to 16 years.[42]

12. Appendix 3 Diagnostic Flowchart taken from SIGN guideline 156 Children and Young People exposed prenatally to alcohol January 2019



a Assessment conclusive=clinician conducting the neurodevelopmental assessment is satisfied that the session was a true representation of the person's ability and that any deficits reported were not due to extenuating circumstances. Assessments may be inconclusive for children under six years of age, because some areas of assessment cannot be investigated with confidence until the person is older or because of other confounding factors, such as temporary life stress or illness.

b Microcephaly is not the only pathway to diagnosis for infants and young children; these individuals may also receive other FASD diagnoses, as specified elsewhere in the algorithm, if they show three areas of substantial impairment on neurodevelopmental tests.

c At risk for neurodevelopmental disorder and FASD, associated with prenatal alcohol exposure. An at-risk designation includes situations where a full neurodevelopmental assessment is not conclusive because of age or situational factors; therefore, FASD may not be the diagnoses. Clinical judgement is recommended.

Contribution of genetic factors should be considered in all cases and referral may be indicated in a typical cases or where PAE is uncertain.

CNS=central nervous system; FASD=fetal alcohol spectrum disorder; PAE=prenatal alcohol exposure.